THE

AMERICAN COLLEGE MAGAZINE

MY CREED.

"I would be true, for there are those who trust me;
I would be pure, for there are those who care;
I would be strong, for there is much to suffer;
I would be brave, for there is much to dare."

—HOWARD ARNOLD WALTER.

"They are slaves who dare not be
In the right with two or three."

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CONTENTS

PICTURE—The Madura American College Old Boys Association in Madras ... Frontispiece

PAGE

Selections from Rabindranath Tagore ... 1

EDITORIAL—What Then? 2

The Poetry of Rabindranath Tagore (by Mr. V. Subramania Iyer, B.A. Hons.) 4

Relativity (by Mr. N. Ramasamy Iyer, B.A., L.T.).. 19

Bacteria Do. Do. Do. ... 30

Letter from Dr. Washburn to the Old Roys ... 37

The Old Boys Day in Madras 41

Notes from the Student Editor 44

The Old Boys Day in Madura 48

College Notes 49

Exchange 52

Subscription 52

Bombay Photo Works.

Madura American College Old Boys' Association, Madras.

Annual Social Gathering and Reception to the Graduates—11th November, 1921.

207

THE

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Selections from Tagore.

I.

"Where the mind is without fear and the head is held high,
Where knowledge is free,
Where the world has not been broken up by narrow domestic wails,
Where words come out from the depth of truth,
Where the clear stream of reason has not lost its way in the dreary sand of dead habit,
Where the mind is led forward by Thee into ever-widening thought and action—
Into that heaven of freedom, my Father, let my country awake!"

II.

Life of my life, I shall ever try to keep my body pure, knowing that thy living touch is upon all my limbs.
I shall ever try to keep all untruths out from my thoughts, knowing that thou art that truth which has kindled the light of reason in my mind.
I shall ever try to drive all evils away from my heart and keep my love in flower, knowing that thou hast thy seat in the inmost shrine of my heart.
And it shall be my endeavour to reveal thee in my actions, knowing it is thy power gives me strength to act.

III.

I ask for a moment's indulgence to sit by thy side. The works that I have in hand I will finish afterwards.

Away from the sight of thy face my heart knows no rest nor respite, and my work becomes an endless toil in a shoreless sea of toil.

To-day the summer has come at my window with its sighs and murmurs; and the bees are plying their minstrelsy at the court of the flowering grave.

Now it is time to sit quiet, face to face with thee, and to sing dedication of life in this silent and overflowing leisure.

What Then?

Some of us are nearing the end of our college course, and the question comes to us, What Then? We have had the advantages of a good education, and every normal young man looks forward to a successful life. Though there will be differences of opinion as to what constitutes success, it is best for us to keep in mind some factors that enter in a consideration of this question.

A great man of the first century who lived close by the scene of the Isthmian games in writing a letter to his friends said, "So run, that ye may obtain." With certain native talents to begin with, the athlete has to keep the body under good control and be temperate in all things. He must be amenable to instruction and inexorable in self-discipline. Quick, ready and resourceful, he must learn to endure hardness, and in many cases he must co-operate with others to get effective team work, thus setting aside personal gain for the sake of the common good.

Life is a contest. In life, no less than in games, success depends largely on fulfilling certain conditions. We acquire through our education the rich experiences of the race; but still, when we "enter into life" so many of us make a dismal failure of it. It is in spite of our education and not in consequence of it. Something more was needful. Had it not been for the training of his powers, the educated man may have made a greater mess of his life.

Hard, steady work is expected of us in the world to day. We must apply ourselves wholeheartedly to the task we undertake to do. Carlyle says, "Genius is an infinite capacity of taking pains." We must find our place in the work of the world, and then pour into it every ounce of energy that we have. Several of us seem to know how to do this when we are preparing for the University examinations, but we lack steady application in our life work. A candidate for the University Crew in Oxford has to row in a boat day after day till he becomes a sort of a rowing autamaton. Any one who desires knowledge must apply himself steadily, and nothing but intense concentration and continued effort can lead one to his desired goal. In practical life, a "push," or a letter of recommendation may give a young man a start, but he cannot hold his place long unless he goes at his work with all his might. The road through life is no flowery bed of ease.

To those who have not been chastened in the struggle for life, to those who have lived in more or less seclusion for four years or more of their life, there is often an undue sense of their personal preeminence. There is the temptation to think that "we know it all." Several of us have some fine-spun theories of our attitude to the world and its problems, but very often forget that there

is a wide gulf between our theories and realities. Spinoza, the Jewish philosopher, said that the two greatest banes of humanity were self-conceit and the laziness consequent upon it. We have to learn from experience the great lesson that every wcrk has its own method and rules of practice. We will have to undergo the discipline of our vocation. We need then a teachable spirit, and a recognition of the limitations of our academic education.

The Greek games were mainly contests of individual against individual. But most of our modern games are contests of teams. Personal pride must be sacrificed at the altar of the good of the whole. Each man's duty is to fill his place well in the organized whole. Co-ordination and co-operation then become the watchwords of success. As Tennyson puts it, "The individual withers and the world is more and more." The successful young man is he, who would recognize his obligations to the community in which he lives, and who would do his very best for the sake of the common good.

If life is a mere struggle for each man to get ahead of the other, our victors would be only either men of wealth or of power. But if life is really faithful service for our fellowmen, then all devoted effort shall have its reward. What then?

> "Act well your part,
> There all the honour lies."

The Poetry of Rabindranath Tagore.

W. B. Yeats, a poet of the new Irish Revival in his introduction to Gitanjali writes: 'The Renaissance has been born in your country and I shall never know of it except by hearsay.' There is a new awaken-

ing in hoary and mystic India. She throbs with new life. Generations of political thraldom have not stifled her love of freedom. Contact with and assimilation of foreign races and cultures have not killed her native literary and artistic genius. In the fifteenth and sixteenth centuries the Mohammedan rule, gave fresh life to Aryan culture 'whose creative energy was on the wane.' Indian art, both plastic and literary, revived. There was a rich crop of painting and poetry; beautiful and yet colossal buildings were erected; Hinduism was brought into closer union and harmony with the religion of the Prophet. Kabir, Nanak, Shaik Mahomed and Manik Prabhu were claimed both by Hindus and Mohammedans as belonging to their communities. The eighteenth century was sterile. It was an age of disorder and destruction. But in the second half of the last century contact with the West and the study of its noble literature brought with it a new sense of freedom. Indians ceased to regard their mother-country as a mere geographic expression. And along with this there has been a cultural revolt and a consequent revival in art and letters. The Calcutta school of painters encouraged by E. B. Havell and inspired by Abanindranath Tagore do not imitate European painters. They have turned to the traditions of their own country and have produced a kind of work more quaint, more restrained in tone, less glowing in colour, and more true to the soul of India, than that of their immediate predecessors.

In literature, Rabindranath Tagore, Bankim Chandra Chatterjee and Mrs. Sarojini Naidu are the best exponents of the Neo-Romantic Movement. Miss Toru Dutt, a haunting name in the history of Anglo-Indian Literature, though brought up amidst environments not conducive to the study and appreciation of things Indian, still revolted against her artificial development, and made

the soul of India speak in such beautiful poems as Dhrūva and others. Mrs. Sarojini is essentially Indian in thought and sentiment. She is especially the poet of India's flowers.

Rabindranath, richer and deeper in thought, loftier in imagination, more susceptible to the beauties of the inner world beggaring the outer with its white radiance, more intensely steeped in the rich traditions and literature of his country and employing his own musical Bengali as the vehicle of his deep yet restrained feelings, and of his highly philosophical ideas, is more than any other the true representative of the Indian Renaissance. He is the lineal spiritual descendant of the Vaishnava saints both of the Maharashtra and Bengal. He is essentially a Baktha tempered by the lofty philosophy of the Upanishads and a philosopher with a soul attuned to the 'Soul of Things.' Ramdas and Kabir, Sri Chaitanya and Chandidas, have all influenced and inspired him. They sang of the glory of Sri Krishna with his lute and Radha, the symbol in form and shape of Love Divine. Rabindranath sings of the glories of the universe, a visible expression of the beauty and music of the Invisible one in eternal joy. Tagore's God is human, not negative. He is the Lord of the Heavens adored by the Rishis of yore. The starry heavens, the silent hills, the bleak and bald rock, the warbling bird, the 'babbling' brook, the deep ocean and the dark forest—all breathe His life. His 'dwelling is the light of setting suns, and the round ocean, and the living air and the blue sky and in the mind of man.' The thunder, the roar of the cataract, the noise of the hurricane, the song of the *koel*, the bleating of the lamb and the murmur of the zephyr are only messages to the poet from Him on high. The universe dances and he sings

'Dance, Holy child! My melody
Shall sing our joy, who only see
Heaven's courtyard here on earthly ground,
And hear a music past our sound
And know in every joy and woe
God's onward footsteps dancing go.'

My poet, is it thy delight to see thy creation through my eyes and stand at the portals of my ears silently to listen to thine own eternal harmony.

The Gardener is the product of the poet's youthful imagination. The songs are the offerings of the finite to the finite. They interpret human love and life. The conflicting emotions of young love find expression in these beautiful fragments. This love is 'cool and fathomlessly deep. It is dark like a sleep that is dreamless. There in its depths nights and days are one and songs are silence.' It is warm and human. It is 'as solid as ethereal, as earthly as magical, as real as ideal.' To live is to love. Perhaps 'It is better to have loved and lost than never to have loved at all.' And love is loveliest after sacrifice when it passes beyond the world and finds itself unconsciously on the threshold of the 'Palace of the King.' The self-surrender of a woman in a 'passion of adoration' to the man she loves is the greatest sacrifice on earth of one human soul to another. 'The heart is only for giving away with a tear and a song, my love!' 'O mother, I swept aside the veil from my face, I tore the ruby chain from my neck and flung it in his path.' 'The lotus blooms in the sight of the sun and loses all that it has. It would not remain in bud in the eternal winter mist.'

Still the loving heart is restless 'athirst for far away things.' The soul 'goes out in a longing to touch the skirt of the dim distance.' It essays to fly to the Great

Beyond. It cries out 'Alas' for my vain desire! where is this hope for union except in thee, My God.'

In his Gardener, Tagore also gives his view of human life. In this age of doubts and discontent he is a robust optimist. He does not hate the world. It is no illusion. Asceticism away from the beauties of the world has no meaning for him.

'No, my friends, I shall never leave hearth and home, and retire into the forest solitude, if rings no merry laughter in its echoing shade and if the end of no saffron mantle flutter in the wind; if its silence is not deepened by silent whispers. I shall never be an ascetic.'

Only love of earth can reveal the true nature of Beauty. The earth also is His who made heaven. It is an aspect of the Divine. 'The trees, the stars and the blue hills ache with a meaning which can never be uttered in words.' 'This outer world has been made with a lavish expenditure of sun and moon and stars. Let us enjoy it and then we can save God's face for indulging in such extravagance.' Life to him is not a vanity. It is a festival. He has been invited to enjoy the feast and thus blessed. He refuses to shut the doors of the senses and sings with Browning

> How good is man's life the mere living! how fit to employ
> All the heart and the soul and the senses for ever in joy?

Life has a meaning, a purpose. Its fulfilment lies in disinterested enjoyment. The use of the gifts of nature to selfish ends ultimately leads to trouble and grief.

> Why did the lamp go out?
> I shaded it with my cloak, to save it from the wind, that is why the lamp went out.

Why did the flower fade?
I pressed it to my heart with anxious love that is why the flower faded.

Why did the stream dry up?
I put a dam across it to have it for my use, that is why the stream dried up.

Why did the harp-string break?
I tried to force a note that was beyond its power, that is why the harp-string is broken.

Giving up the pleasures of the world, turning to the forest and leading a life of negative goodness is not living. Salvation does not lie in renunciation, but in destroying selfish and low desires and surrendering in pure love and service, the individual soul to the Eternal One, who out of spontaneous joy has manifested Himself in things of Beauty.

In the midst of plenty, in the midst of joys and sorrows, and in the midst of the surging life of the universe, the 'god-possessed' soul longs to serve humanity. A recluse hates society and his God is a barren nothing, far away from him. But a true ascetic at heart realises God in service to man and animal. The Lord of 'the poor, the lowliest and lost' is a concrete personal being.

'He is there where the tiller is tilling the hard ground and where the path-maker is breaking stones. He is with them in sun and shower and his garment is covered with dust.'

'Thou art the Brother amongst my brothers, but I heed them not. I divide not my earnings with them thus sharing my all with them.

In pleasure and pain I stand not by the side of men and thus stand by thee. I shrink to give up my life and thus do not plunge into the great waters of life.

Service should be as disinterested, as innocent and as pure as the play of children. It expects neither rewards nor honour. It is the prayer of the jubilant soul to Him who has a deep and reverential care for all the creatures he loves. Man's greatest joy is in being one among and with the world.

> 'Come out of thy meditations and leave aside the flowers and incense. What harm is there if thy clothes become tattered and stained? Meet him and stand by him in toil and sweat of thy brow.'

Life is love and death is its fulfilment. Death does not mean ultimate destruction. It is the beginning of a new life. It is Beauty itself.

> 'O Death! hads't thou been but emptiness
> In a moment the world would have faded away
> Thou art Beauty, the world like a child
> Rests on thy bosom for ever and ever.

It is only an incident in the long life of a soul. 'It belongs to life as birth does.'

> 'The time that my journey takes is long and the way of it long.'

Man has to go through a cycle of births and deaths before he finally evolves into a Muktha and reaches the Lotus feet of God. Threfore man has no reason to fear death. Tagore brings out this eternal truth in the lines.

'Thou hast made me endless. Such is thy pleasure. This frail vessel thou emptiest again and again and fillest it ever with fresh life.'

'If the Gardener is the song book of youth and the romance of the young lover who is satisfied with a flower for itself or for its token of love's happiness to be realised

on earth in a day or night Gitanjali and Fruit-gathering are the books of the old lover who is in love with heavenly desire. He cannot be satisfied but must always wish to transcend life and sensation through death and attain not Nirvana in the sense of extinction, but Brahma Vihara, the Joy Eternal, the realisation of love in its last abode." These songs are the offerings of the finite to the Infinite. Man and God stand in the relationship of a lover and his beloved. 'Radha's dovotion to Sri Krishna is the symbol of the soul's yearning for God.' The true devotee gives his heart, his all, as an offering to his God. The lover in a rapture of spiritual emotion bursts out

> 'I am like a remnant of a cloud of autumn uselessly roaming in the sky, O my sun ever-glorious.'
>
> Thy touch has not yet melted my vapour, making me one with thy light and thus I count months and years separated from thee.
>
> If this be thy wish and if this be thy play then take this fleeting emptiness of mine, paint it with colours, gild it with gold, float it in the wanton wind and spread it in varied wonders.
>
> And again when it shall be thy wish to end this play at night I shall melt and vanish away in the dark or it may be in a smile of the white morning in a coolness of purity transparent.'
>
> 'Master give me the wealth that disdains the wealth of the world.'
>
> 'I shall stake all I have and when I lose my last penny, I shall stake myself and then I think I shall have won through my utter defeat.'

It is after a hard struggle that man reaches this happy state of spiritual anguish. The earth is imperfect, man is imperfect.

'Infinite wealth is not yours, my patient and dusky mother earth. From your breast you have fed us with life, but not immortality.'

Life is a battle. Sufferings await man at every turn. His true goal is to overcome his weaknesses. Undaunted, in the full faith that God sends them out of his love to his own good, he should pursue the path of service and love. He should tell his struggling heart.

Then welcome each rebuff
That turns earth's smoothness rough,
Each sting that bids, nor sit, nor stand but go!
Be our joys three parts pain!
Strive and hold cheap the strain,
Learn, nor account the pang; dare never grudge the throe!

The knocks in the battle of life remind man of his real destiny. Imperfection is the road to progress, to perfection. As Tagore himself says, 'Imperfection is not a negation of perfection.' And the conquest of this through suffering and discipline takes man to the outer-gates of the 'Eternal Palace.' Prayer and self-introspection throw open the gates and the soul stands face to face with its Maker. It realises itself.

This is how the soul evolves. And the conflict between matter and spirit on the one hand and reason and faith on the other, is the first step towards the ultimate goal.

'Obstinate are the trammels but my heart aches when I try to break them.
Freedom is all I want, but to hope for it I flee ashamed.
I am certain that priceless wealth is in thee, and that thou art my best friend, but I have not the heart to sweep away the tinsel that fills my room.

The shroud that covers me is a shroud of dust and death, I hate it, yet hug it in love.'

'He whom I enclose with my name is weeping in this dungeon I am very busy building this wall all around, and as this wall goes up into the sky day by day I lose sight of my true being in its dark shadows.'

Success in this spiritual conflict depends upon the strength of the individual will. Bodily and mental discipline helps the soul to overcome the temptations of the lower senses and to strengthen the will in the pursuit of the goal. The individual takes the resolve

Life of my life, I shall ever try to keep my body pure, knowing that thy living touch is upon all limbs.

I shall ever try to keep all untruths out from my thoughts, knowing that thou art that truth which has kindled the light of reason in my mind.

I shall try to drive all evils away from my heart and keep my love in flower, knowing that thou hast thy seat in the inmost shrine of my heart.

And it shall be my endeavour to reveal thee in my actions knowing it is thy power gives me strength to act.

In its blindness or avidya the soul has been wandering about seeking Him, here there, everywhere, but with no success. Anxious to feel his presence and see Him it begs for His Mercy and Grace.

'When the heart is hard and parched up come upon me with a shower of mercy.

When grace is lost from life, come with aburst of song.

When tumultuous work raises its din on all sides shutting me out from beyond come to me, my lord of silence, with thy peace and rest.

When my beggarly heart sits crouched, shuts up in a corner, break open the door, my king, and come with the ceremony of a king.

When desire blinds the mind with delusion and doubt, O thou holy one, thou wakeful one come with thy light and thy thunder.'

And at last in love and humility the soul rests in hope. The golden assurance that God has heard its prayer and that His grace will surely come gives it comfort and joy. And God also with open arms receives the true devotee. He is the victor and the human soul the vanquished.

'The morning will surely come, the darkness will vanish and thy voice pour down in golden stream breaking through the sky.'

'From dawn till dust I sit here before my door, and I know that of a sudden the happy moment will arrive when I shall see. In the meanwhile I sink and sing all alone. In the meanwhile the air is filling the perfume of promise.'

'The door has been opened in the lovely chamber, the call has sounded and the heart of the darkness throbs with awe because of the coming tryst.'

The call has come. The 'Royal barge' is on the shore and the traveller waits for the Pilot.

Sunset and evening star
And one clear call for me!
And may there be no moaning of the bar,
When I put out to see.

But such a tide as moving seems asleep
Too full for sound and foam,
When that which drew from out the boundless deep,
Turns again home.
Twilight and evening bell
And after that the dark
And may there be no sadness of farewell,
When I embark.
For from out the bourne of time and place
The flood may bear me far,
I hope to see my pilot face to face,
When I have to cross the bar.

The personal God of the poet's religious devotion is the Absolute of his philosophy. He is not negative. He is a concrete spirit immanent in the whole universe of men and things. 'He is above all, through all and in all. Underneath the stone and inside the wood He is to be found. He is abstract yet concrete. He has 'neither form nor formlessness;' He has no name, yet all the names are His; He has neither 'colour nor colourlessness,' He has no dwelling-place, yet the world is His mansion. He is the whole universe.

'If I say that He is within me, the universe is ashamed,

If I say that He is without me, it is falsehood.'

'The earth is crammed with Heaven.' The universe is a revelation of himself.

He Himself is the true, the seed and the germ
He Himself is the flower, the fruit and shade
He Himself is the sun the light and the lighted,
He Himself is the manifold form, the infinite space,
He is the breath, the word and the meaning,

He Himself is the limit and the limitless, and beyond both the limited and the limitless is He, the Pure Being.'

Kabir.

'Thou art the sky and thou art the nest as well.'

'The same stream of life that runs through my veins night and day runs through the world and dances in rhythmic measure. It is the same life that shoots in joy through the dust of the earth in numberless blades of grass and breaks into tumultuous waves of leaves and flowers.'

True to the traditions of Hindu poetry Tagore's songs are essentially devotional and religious. His is the poetry of spiritual joy. Life, religion and philosophy are one. The head and the heart are in harmony. The dry truths of philosophy have been enlivened by deep religious emotion. In that blessed mood

In which the burthen of the mystery,
In which the heavy and the weary weight
Of all the intelligible world
Is lightened :—That serene and blessed mood,
In which the affections gently lead us on
Until the breath of this corporeal frame
And even the motion of our human blood
Almost suspended, we are laid asleep
In body, and become a living soul

eternal truths flash upon the 'inward eye.'

It is his philosophic devotion or devotional philosophy and intense humanity that make Tagore a great mystic. In her admirable introduction to Kabir's poems Evelyn Underhill defines mystic poetry as a 'temperamental reaction to the vision of reality' on the one hand, and as a 'form of prophecy' on the other. 'The word denotes,' says

Hutton, 'a tendency to bore deep into the world of Divine Infinitude, a disposition to prostrate the mind before the Eternal Will and to bring the mysteries of faith close to the simplest acts of daily life.' Mystic poetry is a poetry of love and spiritual vision. It reconciles the personal with the impersonal, earth with heaven, the sensuous with the supersensuous. The mystic idealises the real and realises the ideal. 'Union-in-separateness' is his goal. He stands before God as a lover before his beloved. He sings and even dances in spiritual rapture. With a 'synthetic vision' of the universe he conveys to his fellows what he sees. Kabir is one of the greatest of Indian mystics and Tagore is his nearest parallel. He is free from the dangers of mystical religion. He has eluded the 'excessive emotionalism of a formal anthropomorphic devotion,' and the soul-killing quibbles and logomachy of the current dry and pharisadical Vedantism. His heart is as simple, pure, and happy as that of a child, and as children he is ever in the presence of the One Supreme Reality. Tagore is at once a mystic, transcendentalist, sage, philosopher, prophet and artist.

Poeta Nascitur non fit. Like Shelley, Tagore is a born singer. He sings because he must. His thoughts blossom into poetry as naturally as flower buds in the morning sun. With an imagination highly creative, a mind deeply reflective and a heart delicately sensitive his genius is essentially lyrical. His songs are of unsurpassing and virginal freshness, beauty, charm and sweetness. Each is a flower and the whole volume a beautiful fragrant rainbow-coloured wreath. They have a music all their own. They sound like the gush of a spring or the sigh of a lover. They are as simple as the lily, yet as beautiful. They are impassioned, but the passion is restrained with an under current of sweet and reasoned sere-

nity. Tagore has a rich sense of colour. The rainbow and the setting sun, the snowy mountain and the green foliage, each sends a thrill through his spiritual nerve and gives him 'thoughts that do often lie too deep for tears.' Individuality is the striking note of his poetry. He fills old bottles with new wine and new bottles with old wine. He is intensely patriotic, but his patriotism is not provincial. While loving his country to a passion, he regards others only as a Greater India. It is the universalism and cosmopolitan spirit of his works that have made him one of the world's greatest poets, prophets and seers.

Tagore's style is unique. It is highly figurative and richly decorated, yet simple, transparent and harmonious. He has combined to perfection feminine grace and manly virility. The strength of his style is not the strength of a stout oak but that of a tender graceful reed on the banks of a river swaying about in the wind unharmed. Tagore always sings. 'He' says Yeats, 'writes music for words.' His is not the music of the 'pealing organ' but the plaintive notes of the *Vina*, tender and sweet.

The greatness of Tagore rests not only upon his poetic qualities, but also on his new message to the world. He is the prophet of the future spiritual democracy. His writings and message may allay the spiritual hunger of our age. This new federation of the world shall be built upon the doctrine of the Brotherhood of man. Nations and individuals shall enjoy an artistic life of material and spiritual happiness. They shall be the members of a single family each contributing to the happiness of the other. Freedom they shall have, but not merely the physical freedom given by the vote and assemblies. This new spiritual common-wealth which Tagore visions for himself is that heaven of freedom.'

Where the mind is without fear and the head is
  held high;
Where knowledge is free;
Where the world has not been broken up into fragments by narrow domestic walls;
Where words come out from the depth of truth;
Where tireless striving stretches its arms towards
  perfection;
Where the clear stream of reason has not lost its
  way into the dreary desert sand of dead habit;
Where the mind is led forward by Him into ever-
  widening thought and action.

Relativity.

Theories their value.

The subject of relativity is a recent development in the province of Physics. Progress in Science has not been due to experiments alone. Speculations of a metaphysical nature have also contributed to our scientific knowledge. They have suggested new modes of approach to understand any physical phenomena. The corpuscular theory, the undulatory theory have all been or are being replaced by the electro-magnetic theory in which all electric attraction or repulsion is due to changes in the electric field. Nevertheless, the aforesaid theories have all been helpful in the building up of our scientific knowledge. Newton's theory of gravitation is not the result of any experiment but is purely a hypothesis formed from observing various physical phenomena. The atomic hypothesis is not established by any experiment, but is a very valuable assumption to explain chemical combinations. The subject on which I intend to address you now is also a theory. If

this is able to account satisfactorily the various phenomena around us, it will stand; if it does not, it will share the same fate as the corpuscular theory of heat and light to be replaced eventually by any other hypothesis.

Relativity theory and popular notions.

This subject is of recent growth; it dates from 1905 or more properly 1919 when it gained a larger recognition. It has not yet found popular favour at the hands of all scientists. A few English scientists have in a way accepted it. The Americans wait for further evidence. It is not popular because it strikes at the root of all our past scientific notions. All our universally accepted ideas are on their trial. I have chosen this subject because many of you might have seen in the recent periodicals, some pages devoted to the controversy Einstein *versus* Newton and would have wondered what this could be. I have endeavoured to treat this subject free from many mathematical assumptions—a knowledge of which is very essential to a right understanding of the subject.

All our notions regarding space, time, force and matter are on their trial. Euclidian propositions and Newton's laws are being questioned. Many scientists have found it difficult to accept this theory. The older theories–Newton's laws of motion explained many of the problems in familiar terms—which is a source of satisfaction to our minds. The new theory is based on ideas utterly unfamiliar. It cannot be established—as older theories are, by any material analogy. Anything based on unfamiliar ideas must be contrary to explanation. But the theory of relativity possesses the same property possessed

Why useful?

by the older theories—namely, predicting unsuspected laws; some of these predictions have been found to be true. They cannot be satisfactorily explained by means of older theories. Hence the

recent physicists include it among the theories which explain physical laws. It is also in agreement with modern mathematical calculations.

Let us remember that Euclid's propositions are based on his axioms. His propositions will be true if his axioms are true. His axioms are not questioned. We believe in Euclid's propositions because they can be directly verified. Newton's laws of inertia are believed because with these we are able to account for various phenomena of nature, tides, planetary motion—mechanics in general. Modern science has become possible because of our acceptance of Newton's ideas on motion, acceleration, action at a distance. Newton's principles of natural philosophy are based on certain definitions of absolute, true space and time. If it could be shown that there is no absolute time or space or that they are not real, but nominal, then the definitions velocity, acceleration, mass and force are also nominal. The whole of Newton's dynamics will then have no relation to a world of sense.

Reference bodies.

Let us therefore begin to examine how these terms, space and time are shown by Einstein, not to be absolute. They change with the positions and mind of the observer. Einstein takes a very common place observation of ours and wants us to draw the theory out of it. Suppose you are travelling in a train and that you drop a stone from the window of a carriage. You will observe the stone to drop in a straight line. To an observer standing on the railroad the path is a curved one; it is a parabola. What is the real path taken by the stone? Is there any real path? Is it not relative to either railroad or carriage? What becomes of Euclid's definition of a straight line? Hence in place of the term —change of position in space, we must speak of motion relative to a body of reference. (These bodies of refer-

ence are termed co-ordinates in mathematics. To locate any place or any event we have recourse to bodies of reference—co-ordinates. We can locate a point in a plane by giving the shortest distances of the point from two perpendicular planes or with reference to 3 co-ordinates–when, the body is in a world of 3 dimensions. We shall speak about it later).

Examples. Explained according to classical mechanics.

If a man is walking with a velocity w in a railway carriage moving with a velocity v, then with reference to the railroad, the man's velocity is according to Newton's mechanics $v+w$. This does not hold according to Einstein. A ray of light travelling with a velocity c with reference to the railroad will have according to Newton's mechanics a velocity $c-v$. Thus with reference to the carriage the velocity is smaller. One phenomena referred to one co-ordinate is found to differ when it is referred to another co-ordinate which moves with a uniform velocity with reference to the 1st body of reference. This is opposed to the new principle we just enunciated. Either this principle must be wrong or the velocity of light in vacuo is c, must be wrong. Investigations for determining the latter have conclusively established that light-velocity in vacuo is constant. The theory is therefore being suspected. If we analyse the physical concepts space, time, it will be seen that there is not the least incompatibility between the theory and the constancy of velocity of light in vacuo.

Einstein's concept time.

Now then let us examine, analyse these concepts *time*—what is time? Is the interval between 2 ticks of a clock everywhere the same? Is time absolute? The time determined by astronomers and in general use is fictitious time. It is not absolute time, it is relative to terrestrial observers. Some stars oscillate in intrinsic brightness. Suppose it

is to decide the interval of time between the moments of maximum light of two stars. It may easily happen that the astronomers on Arcturus report that maxima were simultaneous, whereas terrestrial astronomers may report an interval of 10 years between the 2 maxima. They are not giving the true time-interval. What seems simultaneous to some appears to be one of 10 years duration to others. Does true time exist? or is it a meaningless noise? What is meant by this simultaneity? Suppose lightning has struck two places A and B of a rail at the same time. If standing at a mid place between A and B you observe that light takes the same time to travel A—M as for B—M, then the actions of lightning have been simultaneous—so far as reference to railroad is concerned. Are these simultaneous relative to the train? If it be so, then we have true time. To an observer situated at the same position on the train, as on the railroad M, the ligthning from B will be seen earlier than that from A. People in the train therefore conclude lightning struck B first, then A. Hence we do not have absolute time. The concept time has a meaning only when referred to a body of reference; its value changes when referred to another body. Newton's mechanics has been built up from this wrong notion that time-interval is absolute. This notion has to be given up, you see, in the light of the new theory. If the time-interval with reference to a moving body—say a train—is then different from the time-interval when referred to the fixed railroad, then the velocity of the man in the carriage w with reference to the moving carriage is not the same w when referred to the railroad. Hence his velocity with reference to the railroad $v+w$ is wrong. It can be shown that the distance between 2 points A and

Space. B on a train measured with reference to the

train is not the same when measured with reference to the railroad. In the classical mechanics of Newton we have tacitly assumed the two following hypothesis.

Classical mechanics postulates.

(1) The time-interval between 2 events is independent of the condition of motion of the body of reference.

(2) The space-interval between 2 points on a rigid body is independent of the condition of motion of the reference body. It is from these wrong assumptions that we came to the conclusion that the velocity of light with reference to the moving carriage ought to be different from that referred to the railroad. If, as we have seen, we modify our ideas of space and time, then there will be the least contradiction between the velocity of light and Einstein theory.

According to Einstein's theory, we have seen the concepts space and time are not absolute, but vary with reference to the co-ordinates and the condition of motion of co-ordinates. If we know the place and time of an event relative to a body of reference, we can change it with reference to another reference body which is in motion with reference to the first. One condition that must be fulfilled to is that the relations must be such that the velocity of light must be the same with reference to any co-ordinate system. A short while ago, I told you, a body in space is located with reference to 3 planes or in other words it is in a world of 3 dimensions. More properly speaking it is in a world of 4 dimensions. Any event with reference to that body is always related to a preceding event. Time according to Einstein has no independent existence. It ought to be related to other events. Thus instead X, Y, Z constituting the dimensions of the body in any system X, Y, Z and t (time)

make up the dimensions in the four dimensional world. It can be easily shown from mathematical calculations *also*—apart from the inferences drawn by Einstein—that the length of a metre rod moving in the direction of its length is shorter. It is shorter when in motion than when at rest. The more quickly it moves the shorter it will be. The limiting case is when its velocity is equal to the velocity of light, when it will measure zero. Similarly it can be shown that 1″ referred to a co-ordinate system train—is longer when referred to railroad and another system. As a consequence of its motion the clock goes more slowly than when at rest. It will be seen that these values cannot be practically realised by experiments conduct ed on the earth. The value v velocity of train is very small compared to the velocity of light—so that time 1″ is the same in all cases—which corresponds to our knowledge of classical mechanics.

It does not mean any physical change has taken place.

Not observed in terrestrial experiments.

Newton's mechanics is therefore not wrong, but only one case of a more comprehensive one embodied in Einstein's theory. Electro-statics and electro-dynamics are not vitally opposed but are related in just the same way as Newton's and Einstein's theories. Einstein enunciated his principle in the following way: If relative to K, K_1 is a uniformly moving co-ordinate system devoid of rotation, than natural phenomena run their course with respect to K^1 according to exactly the same general laws as with respect to K. We have also seen that the whole theory is based on one assumption the constant velocity of light in vacuo—Combining these two, we can sum up the theory thus. Every general law of nature must be so constituted that it is transformed into a law of exactly the same form

Principle.

when instead of the space-time variables X, Y, Z, t of the system K, we introduce new space-time varying X′, Y′, Z′, and t′ of a system K[1]. In the light of this theory, we have seen that Newton's mechanics requires modification. This modification does not affect ordinary motions—is not perceptible in the example given—*viz.*, railway train. It affects very rapid motions where v approaches very much the velocity of light. We have seen how a metre stick will appear to be less in a very rapidly moving system and the time interval longer. There is another change we have to make in our knowledge of mechanics.

Energy and matter.

We are familiar with 2 laws: conservation of mass—conservation of energy.

By means of the theory of relativity, the two laws have been united into one law. If a body acquires some energy, then its inertial mass can be shown to increase, the inertial mass or the heaviness of a body is not constant but varies according to the electric charge it receives—the change in the energy of the body. According to Newton mass is constant and cannot be destroyed or increased. Radio active substances which are constantly emitting energy must have their masses decreased.

Action at a distance.

A third aspect of the theory of relativity is a change in our notion of action at a distance. Faraday and Maxwell believed that action at a distance was impossible, it must be due to a change in medium. Thus a medium Ether–was imperative to their mode of reasoning electric and optic phenomena. As a result of this theory, Newton's law of gravitation was impossible. Faraday and Maxwell tried to explain all phenomena in terms of changes in the electric condition of the medium filling all space. The theory of relativity on the other hand shows that action at a dis-

tance with the velocity of light always takes the place of instantaneous action at a distance and that the law of attraction is due to a gravitational field.

In what other ways has this theory been useful? Michælson and Morley wanted to find out the velocity of earth through the Ether. They made experiments and came to the conclusion that the velocity of earth relative to ether is nil. It is a negative experiment. The true velocity is not nil for we have known it to travel round the sun. They were inclined to believe in the non-existence of ether. Various plausible hypotheses were invented to support this negative experiment. The earth drags the ether with it or that matter moving through ether is contracted as a result of its motion in just such a way as to conceal the earth's motion and that light is a phenomena of corpuscular emission. Einstein suggested some tentative generalisation—which are now known as the hypotheses of relativity—Any experiment performed on board ship cannot disclose the ship's velocity through the sea. It is entirely different to one who is free to experiment with both the ship and the sea. Based on this, Einstein formulated that the velocity of earth through ether could not ever be revealed by any experiment whatever—performed on earth. It follows from this that all phenomena of Nature are the same for any two observers who move relative to one another with a constant velocity. Fizeau had found out the velocity of light through water in motion. Einstein showed that as a result of his theory his calculations for the velocity of light in a moving medium agreed with Fizean's experiment. This has been a crucial test for Relativity.

Michælson's experiment.

Einstein made some predictions based on his theory. These are:—

1. A ray of light from a star would be bent in its passage near the sun. This will be caused by the sun gravitational field. To Einstein, a ray of light of which is a form of electro-magnetic energy must possess mass and must therefore be bent out of its course in passing near the sun. According to Newton, corpuscles as well as planets have mass and are therefore attracted by the sun. Einstein says that the attraction is not only due to its inertial mass but also its high velocity and the attraction must be twice as great as it would be according to gravitational law. A ray of light according to Einstein ought to be bent 1·75″ as it passes near the sun. It is therefore necessary to take advantage of a total eclipse of the sun to observe the stars. This was done in 1919. The stars in the neighbourhood of the sun were photographed during a solar eclipse. A second photograph of the same stars is taken when the sun is situated at another position of the sky, *i.e.*, a few months earlier or later. The position of the stars on the eclipse photograph were displaced outwards American scientists wait to confirm this in 1922 solar eclipse.

Predictions.

2. The path of every planet round the sun or the orbit is an ellipse with the sun at one of its foci the end of the ellipse near the sun is known as the perihelion when the planet moves very quickly. If there be a second planet, the path of the first planet will advance slowly (Newton). According to Einstein the mass of a planet depends on its velocity. Its mass is greatest at the perihelion. In addition to gravitational attraction, there will be another attraction near the perihelion—consequent on the increased mass due to its high velocity. The orbit of mercury was studied. The advance noticed was 474″ per century while for other stars it was 532″. Einstein predicted from calculations that it would be 43″

over—a fact explained by Einstein and not by other theories.

3rdly. All the spectrum lines should be shifted near the red end—caused by the gravitational field Evershed observed it this is partially proved.

This theory opens up fresh fields of investigation. Are electric and gravitational fields alike? Is the universe finite or infinite? These problems await much speculative thought.

Conclusion.

It will be seen that this theory is based on two fundamental facts—which we shall say are the postulates

(1) The velocity of light is constant in vacno.

(2) The velocity of earth cannot be found out by experiments conducted on earth—making the ether medium as impossible of existence. All phenomena of nature are the same for any two observers who move relative to one another with a constant velocity.

It may be asked why so much interest has been created in the science world by this theory, *viz*, that space and time are relative and are not absolute. The physicist is interested in it because it is an outcome of a negative experiment of Michælson and Morley to prove the existence of ether and is therefore a sequel to Faraday's electro-magnetic theory. It gave a new interpretation to Newton's laws of motion and gravitation. It showed that Newton's laws are only one form of the general law embodied in the relativity theory. It is of importance to the mathematician, because he sees in it a different world—not the flat world of 2 dimensions—Euclid—or the 3 dimensional world of Geometers—but the four dimensional world where time has no independent existence. It is of interest to the astronomer

because facts which could not be explained by Newton's laws are easily explained.

Opinion of Lodge.

This theory has not yet been widely accepted. Sir Oliver Lodge says in this connection–" an ordinary physicist is full of admiration for the equations and criteria borrowed from hyper geometers applied by the genius of Einstein and expounded in this country by the unexampled thoroughness and clearness of Eddington. But notwithstanding any temptation to idolatry, a physicist is bound in the long run to return to his right mind; he must cease to be influenced unduly by superficial appearances, unpractical devices and ingenious modes of expression and must remember his real aim and object is absolute truth and beneath and above and around all appearances, there exists a universe of full bodied, concrete and absolute reality."

Bacteria and Immunity or The work of the biochemist.

'Now-a-days the serpent that bites man's heel is in nine cases out of ten microscopic' said Sir James Thompson. These microscopic organisms or bacteria play a very important part in the arts and industries and in the life's processes. Carried on the breeze and water, these countless myriads of micro-organisms carry out unseen the never ceasing change of nature. Putrefaction and decay, the souring and curdling of milk, the production of dyes, the manufacture of alcohol and wine—all these are brought about by the tiny living organisms known as bacteria. There are different kinds of bacteria :–(1) The nitrifying bacteria which help the plants in assimilating nitrogen for their growth from urine and manures by converting them into ammonium compounds.

(2) The dairy bacteria which cause the milk to curdle. (3) The oxidising bacteria which cause fermentation in sugar and converts it into alcohol. (4) The leguminasae bacteria which living on the nodules of peas and beans help to build them up by absorbing free nitrogen from air, and lastly the Pathogenic bacteria which produce toxins or poisons and bring about the various kinds of diseases. Diseases such as typhoid, cholera, plague, small-pox which are all due to these microscopical creatures. Inquiry has been made into the cause of these diseases and methods are also employed to render lower animals and human beings immune from attacks.

During the present war, the mortality due to typhoid which raged very severely when the expeditionary force was in France was far less than on other occasions. The value of preventive inoculation has been established in a most convincing manner. People now-a-days submit to vaccination and plague inoculation more willingly than heretofore. The last decade of the 19th century has been a memorable period in the realm of discovery. Louis Pasteur is the founder of bacteriology. Everybody is familiar with Pasteur institute at Coonoor, where patients are treated for dog's bite. His experiments in connection with anthrax, his investigation of rabies have been successfully followed by other researches in the cause of diphtheria by Lœffer, Behring and Roux who have shown how by injecting serum into a patient, the disease is made less virulent. Cholera and influenza could easily be combated if only their true causes be found out and scientific methods of conferring immunity be determined. Very often doctors advise us to have injection of one or other serum into our blood. What really takes place at these injections or inoculations, the doctors are not able to explain. It is to the biochemist that

we have to apply to tell us what part these bacteria play in our blood and how these are destroyed by the modern methods of preventive inoculation or serum theraphy.

These bacteria or bacilli find an easy access into the blood of animals. They move about in the blood and breed or multiply if circumstances are favourable for their growth; they exude poisonous substance known as toxins into the serum of the blood. A cloudy swelling of the affected part takes place; disturbances in circulatory and respiratory systems are created; breathing becomes hard and capillary hæmorrhage occur, fever ensues. All this happens if the animal is susceptible to the disease. Fatigue, starvation and exposure to cold lower the general resisting powers of the system and increase the susceptibility of the individual to take on the disease.

What becomes of these toxins? If the structure of the body be analysed we find cells go to build up the tissues. These cells have to collect food and transform them into fresh protoplasms. Each cell (according to Ehrlich) is supposed to have side-chains by which it takes on foreign matters, whether nutritive or deletrious. These side-chains have no selective power. They will take on food or toxin with equal readiness, if a toxin is taken the side-chain becomes useless to the cell. On a large of influx of toxins, many of the side-chains will be rendered useless and the cell cannot take the nutriment. The cell dies; with the death of a large number of cells the whole system suffers. Finally death ensues.

Suppose there is a small bruise or wound on our skin; in course of time new layers come into existence. The upper skins peal off and are replaced by a fresh one. Experience has told that a second attack of typhoid is less virulent than the first. What is the change the -

system has undergone to meet the second attack more efficiently. Ehrlich explains this as follows:—

When there are a few toxins, many side-chains to replace the useless ones will be formed. These are of no value to the cell in acquiring nutritive matter. These break off from the cell and float in the blood. They differ from the original side-chains in that they can take hold of the very toxins which have brought them into existence. These free side-chains floating in the blood are the anti-toxins; thus when there is a light attack of typhoid or cholera from which the patient recovers, there are formed a large quantity of anti-toxins capable of combining with toxins and neutralising them. Hence the second attack is less virulent; a second dose of toxin will find a number of free floating side-chains or anti-toxins. The cell is therefore not attacked. It goes as usual to build up fresh tissue. This theoretical explanation of Ehrlich is in consonance with experimental facts. A very dilute solution of snake's venom is injected into the blood of a rabbit; it suffers inconvenience for a time a repeated injection of this is made in the very same rabbit at intervals. The rabbit does not suffer inconvenience. A very large quantity of snake's venom, is injected. The animal does not die. The animal has become immune. Some change has taken place in the blood of rabbit with which it is capable of neutralising the poison. Some anti-venom has been formed.

Pasteur inoculated 25 sheep with a weak solution of anthrax poison. He inoculated them twice. Very strong anthrax bacilli were then introduced into these 25 sheep and further into some more 25 sheep which had not undergone any previous inoculation. On June 2, 1881, he proved before a large assembly the value of inocula-

tion. The 25 sheep perished while the first 25 remained unaffected.

A laboratory experiment will establish the formation of these anti-substances in the blood when some toxins are injected.

Pure milk is taken in 3 test tubes; some ferment which will curdle milk is taken in another test tube. This is injected into the serum of a rabbit at repeated intervals.

This serum and the serum of an untreated rabbit are separately added to the milk in 2 test tubes, while the 3rd test tube contains pure milk. This ferment is now added. The milk is seen to curdle very soon in two test tubes, while the tube containing milk with serum of the treated rabbit requires a large quantity of ferment to curdle. There is therefore formed in it a very large quantity of anti-ferment corresponding to the anti-toxin we mentioned.

It has been seen that the typhoid fever takes a much longer time than diphtheria and other diseases. In this case the toxins produced by the bacilli remain within their own walls. The bacilli multiply in the blood, finally disintegrate; the toxin now enters the blood; the typhoid fever reaches its climax. If the serum of a typhoid patient be collected and the virus made weaker by boiling and by injecting it into other animals be injected into the system, the body becomes immune against the attack of typhoid fever; this injection has to be made a number of times at repeated intervals. The typhoid bacilli do not multiply; but are killed.

How does Ehrlich explain the above with his side-chain theory? He supposes that some of the side-chains are complex in nature; they are of two groups; one

group to seize the bacilli and the other to influence them to exude a sticky substance known as agglutinum which makes the bacilli motionless.

Experiment has proved that normal serum is capable of killing some typhoid bacilli, while in immunized serum a large number die; if the immunized serum be heated, the bacilli do not die completely.

Hence the normal serum and the immunized serum contain both the substances necessary for killing the bacilli. According to Ehrlich there are a large number of small bodies known as complements in blood which by themselves cannot destroy bacilli. The immunized serum contains intermediary bodies which are the side-chains that have been cast off from the cells. These intermediary bodies take on the complements which attack the bacilli. The bacilli are killed. We can now have a general survey of the machinery which according to Ehrlich, the body employs to ward off attack.

1. The toxins are the real sources of danger. The system produces anti-toxins to cope with them directly.

2. A rapid multiplication of bacteria will result in a large quantity of toxin. The body produces agglutinum which serves to hinder motion and breeding power.

3. The bacilli are destroyed by the complements with the help of the intermediary bodies.

It would have been noticed in this method of treatment, considerable work is entailed on the organism. It is not direct; if some drug which could attack the microbe directly could be found out, this labor on the organism would be saved. Ehrlich wanted to find out a drug which could cure syphilis. Most substances introduced into the system to kill bacteria attack the tissues as well. Mercury or arsenic can be used against syphi-

lis; but Ehrlich wanted to find some organic matter which will act as intermediary body and fasten on this complement, mercury or arsenic to the parasite without touching the tissues. An immense number of compounds were investigated, the most successful being the 606th compound, known as 606-salvarsan.

These laboratory experiments of the biochemist have not only been useful in conferring on animal this blessing of immunity against attacks, but have enabled them in establishing biological relation among animals.

The serum of a rabbit injected with dog's blood will precipitate with fox's. Similarly the blood of a donkey will cause a precipitate in the serum inoculated with horse's blood.

Human serum is injected into a rabbit at intervals. The rabbit's blood has acquired a new property. It will throw down a precipitate with human blood and not with horse blood; if a man is accused of murder and there are blood-stains on his cloth, we can trace if the blood is of human kind or he is a butcher. I shall close my address with the following quotation from Sir R. Ross.

Sir R. Ross

'Our duty at present is to comprehend the forces of nature; to set our state rationally in order; to stamp down disease in body, mind and Government; to lighten the monstrous misery of our fellows not by windy dogmas, but by calm science.' This is the duty of a biochemist.

Dr. Washburn's Message to the Old Boys Association.

MERIDEN, CONN., U.S.A., OCT. 3, 1921.

To my Old Boys and Later Student Friends in the College.

I am glad that you have successfully instituted a College Day with good prospects of its future fitting observance. For a college is not so much like a great dining establishment as it is like a great family with its family ties, its history and traditions extending back into the past and its cherished memories of worthy lives and great and noble deeds and self-sacrifices of its former members which it loves to recount and hand down to succeeding generations. Ours, however is not an old college. I am reminded, as I write that this is the 40th year since the University of Madras received us into the fellowship of its college fraternity. We have not very much history or many college traditions. Still, I have the best reason to believe that some of our Old Boys have done deeds and are living lives of service that our college will be glad to remember and recount in the future.

Once upon a time, I remember quoting to a school some verses entitled Forty Years and After by an Old Boy of Eaton or Harrow or Rugby, or perhaps Marlborough addressed to his fellows, the Old Boys and to his juniors in his school. In these verses he reminds them that the spirit, the discipline, the resolve, the character which has stood them in goodstead on many a strenuous field at home and abroad had been acquired and made a part of their very life on the athletic and in the class rooms of their school. He carries them back to their old school haunts and into their life there with all its wealth of memories and warns them that the successes of the future will depend on their maintaining the

spirit and best traditions of their old school life. Unfortunately, we have not behind us the traditions, the history, the famous men, the notable deeds and lives of these great schools to beckon and spur us on. It is a misfortune because youth is preeminently a worshiper and follower of ideals. But on the other hand, our misfortune is also our good fortune; for it opens before us the opportunity of ourselves creating for our college what is the most precious possessions of those ancient schools—lives and deeds of which history is made, service to our own people and district and state, their altruism and self-sacrifice, the scholarly and scientific achievements of our college men. I challenge you, gentlemen, to look around here in this district among your own people, in Malabar, in the other districts represented here and take note of the needs calling out most urgently for relief, the deficiencies most detrimental to the welfare of the people, and address yourselves to the task of their removal—each to the need he sees most pressing. I am sure you will find enough to engage your best efforts, though it is quite true that 'those who have grown up with evils are more apt to overlook them than those who have travelled in other countries and can compare their own and other lands. But all here can see enough clamoring for redress to engage all the skill, the science, and the wisdom the college has taught you and applied with your utmost devotion. I challenge you Men of this College to pick up the gauntlet and make a fight against real, popular evils with all the spirit and devotion of the knights of old and all the science of the present. True, most of you cannot do this as a vocation; you must work to live. Then, do it as an avocation; and with all the strenuousness of the athletic field.

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On the grounds of my own American College stand monuments in bronze and marble to former college men who have greatly lived and nobly died for their country and for the world, while within the chapel are inscribed upon its wall in letters of bronze, the names of others, the memory of whose spirit and service we would not willingly let die and in its "storied windows richly dight" are commemorated still others whose superb idealism and devotion to science and human welfare have been an inspiration to generations of young men. It is good to spend four years of one's young-manhood in such halls of learning and in such a fellowship of worthies of the past.

Now, Friends, I have a vision; a vision that is coming true after we shall have done and finished our work; a vision which involves this college and other institutions working in a similar spirit. It is a vision of a better Madura a better Malabar, a better Tinnevelly; a land where among both men and women illiteracy shall largely become a thing of the past; where intelligence shall have taken the place of crass ignorance and stupidity; where woman shall have found her true place and come into her own; where, because of this have come better homes, and have come better dwellings in town and country with better and more sanitary surroundings; where plague and leprosy and malarial fever and a dozen other contagious and epidemic diseases shall have been banished or greatly restricted; where well schooled physicians shall be found in every town and their services be available in every village and hamlet; where Indian engineers shall have more completely conserved the water supply of the country and shall have made them much more serviceable than at present: when cultivators shall till their land under the advice of agricultural experts provided

for them by the government; when they shall refuse to rear any but improved breeds of domestic animals best suited to their wants; when fuel plantations shall cover much waste and jungle land, and farm refuse and jungle waste products shall be converted to better uses or into commercial products: when Indian inventors and engineers shall have adopted much western machinery and implements to Indian use, and Indian manufacture shall have brought them within the purchasing means of the people; when electric power from the Periar shall be supplying the needed power to a multitude of Indian machine shops, furnaces and mills; when Indians shall have devised more expeditious means and methods of locomotion and light transportation, and Indian mechanics have made them available to a large part of the people; when the grosser superstitions have died out; when a friendlier spirit has brought castes and classes into kindlier and more helpful relations; when the Fatherhood of of God and the Brotherhood of Man have come to be something more than academic phrase; when many more shall have accepted the Jesus of the Gospels as their ideal and master.

This is the Madura and Malabar and Tinnevelly my vision shows me: and their vision is coming true. Already men and women are working for it. But between that vision and to-day, how many obstacles, how many disappointments, how much heart-breaking toil, how much patient waiting, how many successes, how many slow coming victories and triumphs. Men of this College, do you not see that this is all work for educated men and women?—at least, its initiative and leadership. I challenge you each to find your place and take up your work in bringing about that better Madura and Malabar and Tinnevelly.

When that day has been ushered in, then rightly there should stand on this college campus monuments in marble and bronze to those who have wrought mightily and have led others in achieving this victory and on the college walls should stand recorded the names of others who had wrought as faithfully and filled their lot as courageously and patiently as the best.

And now, Gentlemen, when college days are past and some measure of prosperity has come to you in your profession, then remember your college. As an Indian gentleman who was disinterestedly helping a bright boy through school, replied to me—Why do I do it?—"I owe everything I am to you, Sir. Why should I not repay to others something of what I have received. And indeed why should he not? And why should you not?

Sincerely, your old friend and fellow worker,

GEO. T. WASHBURN.

The Madura American College Old Boys' Association, Madras.

The Annual Social Gathering and Reception to the Graduates.

It would be of interest to the readers to know that the Old Boys' Association at Madras is growing rapidly and is becoming more and more organised ever since it has been started. The strength of the association is about a hundred at present. The activities of the association unfortunately are not many and it is to be noted in particular that the majority of the members are immediately connected with more than one association, and are scattered in the various parts of the town and suburbs and therefore the possibilities of gathering together are few and far between. It is the extreme love of and the

pleasant memories of their life and career in, the *Alma Mater* which is one of the few institutions in S. India that are run on democratic lines, that gathers them together once a year when they enjoy a social hour with their beloved old principal.

Preparations for holding the social gathering were made early in August. The ex-secretary Mr. J. D. Chelliah convened a meeting of the representatives from the various colleges in the town and suburbs and Mr. P. E. Eapen, a senior B.A. student of the Christian College was unanimously elected to be the secretary for the year. The secretary with the help of the representatives was able to collect subscriptions from almost all the Old Boys without much difficulty. Many of the members volunteered their services to make the functions of the association successful.

It was decided to hold the social gathering in November as usual when a fitting reception to the graduates was to be given. Accordingly notices were circulated among the members. The news that Mr. Zumbro, our old Principal was coming for the convocation and the readiness with which he consented to stay here a day more to spend a few hours with us created great enthusiasm and unbounded joy in the heart of every member.

The function was to begin at 3 P.M. on Friday, 11th Nov. 1921, the day succeeding the convocation. Half an hour before the appointed time a good gathering of the members thronged to the balcony of the Y.M.C.A. buildings waiting eagerly for the arrival of Mr. Zumbro. Mr. Zumbro and Mr. Chandler came together and they received a vociferous cheering. They were led to the hall where the distinguished guests were present. Among these were Mr. and Mrs. Herman, and Mr. and Mrs. Hindle of the Y.M.C.A.

Without much delay the function commenced and Mr. Zumbro was voted to the chair. He made a few introductory remarks in the course of which he expressed his sincere and heartfelt joy at the sight of so many of his Old Boys. This being over, refreshments were served on a lavish scale and the Principal took this opportunity to talk to every individual member. It is impossible to express here how happy were these few minutes for each member.

After the social hour, Mr. Mahdi Ali, an Old Boy and a senior B.A. student of the Christian College welcomed the graduates in an eloquent manner. In the course of his speech he touched upon world problems in a novel and inspiring manner. When the tremendous applauses raised by his fiery speech had subsided, Mr. D. B. Daniels, a new graduate and a student of the law college rose in response to the welcome. He thanked the Old Boys' Association for the hearty welcome they had accorded to the new graduates and so warmly expressed by Mr. Mahdi Ali.

Next Mr. M. Alexander proposed the toast to the *Alma Mater* in a fitting manner. On behalf of the association he expressed the disappointment of the members created by the absence of Mrs. Zumbro on the occasion. The Principal made the response and consoled the members by saying that it was only due to the ill-health of Mrs. Zumbro that she was not able to attend the function. He promised to convey our wishes to her and thanked the association on her behalf. The concluding remarks of the Chairman whose genial presence was a source of great cheer, were humorous and instructive. He once again expressed his profound satisfaction at the sight of so many of his Old Boys, though belonging to various institutions at present, yet all united in the bond

of allegiance to their old college. He congratulated the members and the managing committee for the success of the meeting and expressed his hope that ere long the *Alma Mater* will send graduates and undergraduates in increasing numbers to the metropolis. He was extremely satisfied to see that many of the Old Boys were medicoes and paid a great tribute to the profession in his usual characteristic humourous manner. The members then adjourned to the law college premises where Mr. P. M. Krishna of the Bombay Photo works took a group photo which appears in this issue.

Lastly the secretary Mr. P. E. Eapen proposed a vote of thanks to the Chairman and to all the distinguished guests and also to the authorities of the Y.M.C.A. for the use of the hall placed at the disposal of the association for the occasion. With cheers to the *Alma Mater* the enjoyable function came to a close.

Y.M.C.A. Hostel,
Esplanade, Madras,
5th Feb. 1922.

P. E. EAPEN,
Honorary Secretary.

Notes from the Student Editor.

'Socials' in relation to American educational aims in Madura.

Our Principal pronounced definitely the aim of America in establishing and maintaining an educational institution at Madura in the following words: "Being foreigners, we have often failed to understand your ideals, your customs, your needs...... But with all our disagreeable faults, all our mistakes I think I can truly say that it has ever been our real desire to serve you in love. ...... We are not here to destroy but to help you to fulfil your highest ideals, to satisfy your deepest longings, to realise

your noblest destiny. We would help you to preserve out of the changing past all that is worthy and noble, so that the divine message of India may never be lost from the earth." Then in eloquent, noble, ever-memorable words he closes his 'Report' with his earnest prayer that our college here may be the meeting place of the East and the West.

As one reads the closing portion of Mr. Zumbro's 'Report' one feels that our Principal has given expression to one's own cherished ideal hidden in the inmost recesses of his heart, that to the American members of our college staff, especially to some of them, his words are literally applicable: that we are now far better than what we were before we felt the influence of the wholesome leaven of democratic America; that in the 'social' entertainments our American professors and their wives receive their students not in any formal, reserved, or cold manner, but with all the warmth and cheerfulness that human nature is capable of, setting aside for brief period "the professorial airs" and the frigid atmosphere of the class room.

These social entertainments are indeed one of the happiest features in the relation of a professor to his student and *vice versa*. The other day when the IV class was invited to tea by Mrs. and Mr. Guise, every one of us felt how free the American could be with his dusky Indian brother; how, when discarding all formalities and cumbersome ceremonies, he could fling himself heart and soul into merriment; and how genial, how simple, how cheerful is the home of an American when he is himself. During the few minutes' conversation with Mrs. Guise we learnt what it is to enjoy the fellowship of an American lady: she was so good and kind, so sweet tempered, so very full of genial mirth and gentle humor—in short so very

truly American that we believe that her presence in our midst will exert a chastening influence on the turbulent youngster new at college. That day Mr. Guise, the merriest, the frankest, the most tolerant, the most humane true gentleman that we know of, showed to his boys his own warmth and depth of affection for them. The influence of Mr. Guise over his students will be deep, profound, and lasting.

Thus, it is these social hours that reveal to the student body the most beautiful and charming side of American life, and helps both students and professors to understand each other fully. It is therefore desirable that the points of contact between the professor and the student should be more and more numerous than at present, so that the East and the West may understand each other better.

Hartal.

The saddest feature of student activity in our college was the partial observance of 'Hartal,' on the 13th January 1922. Had students understood their position clearly, had they been in any way influenced by true democratic spirit, had they considered the probable result of their conduct if we had a severe and unsympathetic Jeffery-like hanging Principal, had they realised that by observing Hartal they were resting each foot on a different boat —had they revolved in their minds all these things, such an act might never have disfigured the annals of student activity. But youth, in its red-hot füry enthusiasm often fails to consider its own interests or the logical conclusion of the premises it stands upon.

Library.

We understood that there has been a vast increase in the number of our library books and in their quality.

Students who study in the college after March 1922 will be profited a great deal. Certain very costly up-to-date works have been allowed to grace our library.

A reformation must be effected in the management of our library. The long-winded, tiresome, and unnecessary ceremonies that have to be administered to a book just about to be lent is needless labor. The card system is more open to many dangers at the hands of students than other systems. Besides, it is too rigid, and too formal.

Thanks are due to Mrs. Guise for the fact that the system followed in the management of our library did not engender greater inconvenience to students than it has done.

Selection Examinations.

Last year, the Student Editor noted in No. 2. Vol. III of our magazine regarding the selection of the Intermediate students that only about eighteen were 'plucked.' This year unfortunately the number of 'plucked' was augmented by seven. We believe that 'plucking' in Selection Examinations is not wholesome. 'Plucking' and complete sifting in the promotion from the junior to the senior classes and not imposing selection examinations on 'Senior' students will be more advantageous to the students as well as to the college.

As regards selection in the Senior B.A., no one has any reason to complain.

D. RAMANUJAM,
Student Editor.

The Old Boys' Day.

December 17, 1921 was an enjoyable day for the graduates and old students of the College, when they met together and renewed their devotion to their *Alma Mater*. The day began with sports in the morning, followed by the Alumni dinner at noon. Mr. Peter Isaac, B.A., L.T., presided over the business meeting in the afternoon. The election of officers took place. Mr. Peter Isaac and Mr. N. Ramasamy were re-elcted as President and Secretary respectively of the Association. A committee consisting of Messrs. R. Michael, V. Subbusesha Iyer, K. Kameswara Iyer, S. Ramachandra Iyer, R. Rengasamy Iyer, S. Venkatachala Iyer, David Masillamoni, P. Asirvatham, Michael Arirvatham, S. J. Theodore, and S. Mahadeva Iyer (Convener) was appointed to make arrangements for the unveiling of a portrait of Dr. Washburn early in the next academic year. A subscription list was opened on the spot, and all contributed liberally. Finally it was resolved to plan for the next celebration of the Old Boys Day in connection with the College Anniversary either in the last of August or early in October.

At four tea was served to the old and new students of the college, after which the public meeting began with Mr. L. K. Tulasiram, B.A., B.L., Chairman of the Madura Municipal Council in the chair. The program was as follows:—

1.	Prayer ...	Dr. J. J. Banninga.
2.	Song ...	Mr. R. V. Sundaram.
3.	Toast to the King Emperor	Chairman.
4.	Rule Brittania	College Choir.
5.	Dr. Washburn's Message	Secretary.
6.	Prize Distribution	Mrs. Zumbro.

7.	Toast to the College	Mr. S. Ramachandra Iyer, B.A., B.L.
	Response ...	Rev. A. J. Saunders, M.A., F.R.E.S.
8.	Toast to the University	Mr. R. Rengasamy Iyer, B.A.
	Response ...	Rev. W. M. Zumbro, M.A., B.D., F.M.U.
9.	Toast to "Our Young Friends"	Rev. G. P. James, B.A., L.T., B.D.
	Response ...	Mr. Shunmugasundaram.
10.	God Save the King.	

With the usual vote of thanks the function came to a close.

College Notes.

We are glad to welcome back in our midst the Saunders and the Flints after their furlough. Both Mr. Saunders and Mr. Flint have done research work during their stay in America, and we believe their contribution to the college will increase as the years go by. Mr. Saunders has resumed the Presidentship of the Gokale Society, and Mr. Flint the charge of the new physical science department for the B.A. classes.

The Hesses left Madura on the 8th of this month for America. After visiting some of the important cities in North India, they expect to sail from Bombay about the 1st of March. We wish them a pleasant and safe voyage home.

On the afternoon of the 7th the students of the Senior B.A. class gave a fitting farewell to Mr. Hess, and expressed their deep appreciation of his work in the Col-

lege. We would only quote a few sentences from the address that was read on the occasion. "We take this opportunity to express our appreciation of the sound and excellent methods of your instruction and the most original and masterly exposition of the subject entrusted to your care, which have left deep and lasting impressions in our minds. Short as has been your stay in our midst, yet you have become firmly ingrafted to our affections, all the more so by your simple and unassuming manners, noble deportment, broad-mindedness, and sympathy to all our aspirations. We thank you most heartily for the genteel treatment you have invariably accorded to us in the class room and elsewhere, and for the unfailing good humour with which you have patiently listened to our at-times-heated debates and discussions."

We were fortunate in having several outside lecturers during the term. Dr. Farquhar gave two lectures on "Karma" and "Indian Art." Miss Wyman gave an address on "Education in the United States." "The Economic, Political, and Moral Bases of the International Order" was the subject of a series of three lectures by Prof. G. M. Dutcher of America.

Mr. Charles D. Hurrey, General Secretary of the World Student Christian Federation, spent a day in the college. After an address on "The Students and the Present World Situation," several students met with him for short interviews in the afternoon. Twice he met with the Christian students of the college, and his presence was inspiring and helpful.

The Night School is being conducted this year under the secretaryship of Mr. Muhamad Hussain, a student in the second class. It has not been as prosperous as in the past year, and we hope that the students of the college will manifest in a very practical way their interest in their needy fellow-men.

Athletics.

This past year has been marked with keen interest in athletics A larger percentage of students took part in the various games than in previous years. And as the Athletic Department of the College is one of the very important Departments, the Athletic Committee and the Staff are gratified to find the students taking such a lively interest in athletics and to see the fields and courts crowded with enthusiastic players.

Because of lack of funds, it was not possible to arrange for sending any of the teams to compete with outside Colleges. But several local matches were arranged and this has aroused much enthusiasm on the part of the players. And the College has been able to hold its own in Hockey and Badminton in the contest with other teams.

Volley ball was started for the first time this year. The court is crowded every evening for it has attracted many players. This is a valuable addition to our sports for it enables so many to play at one time. It will perhaps be necessary to open another court next year.

In February the Tennis Club held its Annual Tournament and there was a long list of entries. Every even-

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ing the courts were a scene of lively contest between the rival players. The Badmidton Club entered a local Tournament. As the contests are still going on as this goes to press it will be necessary to report of the results of these Tournaments next year.

As games and contests are valuable factors in the development of the student and fit him for a healthy life and for vigorous study, the Athletic Committee hopes to improve arrangements for games so that every student will have an opportunity to get regular exercise. The body is the temple of the soul and mind and so should be cared for with great diligence. Let our aim be to develop a strong mind in a strong and sound body.

Exchanges.

Acknowledged with thanks.

"The Journal of the Kumbakonam College Literary Society."

SUBSCRIPTION.

The Finance Committee of the College recommend that a special fee known as the *American College Magazine* fee be instituted. The fee will be As. 2 per term, and is to be collected at the same time and in the same manner as other special College fees, in return for which the *Magazine* will be furnished free to all students of the College.

The annual subscription to this *Magazine* is one rupee. We trust that a large number of our friends both in this country and in America will become regular subscribers to the *American College Magazine*. All "Old Boys" of the College should send their names and addresses at once, and thus keep in touch with their College through the *Magazine*.

(Signed) THE TREASURER.

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